Translation

PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference mic156wo	FOR FURTHER ACTION	See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)
International application No. PCT/EP2003/003782	International filing date (*day/month/year*) 10 April 2003 (10.04.2003)	Priority date (*day/month/year*) 12 April 2002 (12.04.2002)
International Patent Classification (IPC) or national classification and IPC G01N 33/543		
Applicant MICRONAS GMBH		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.

2. This REPORT consists of a total of 6 sheets, including this cover sheet.

   ☒ This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

   These annexes consist of a total of 1 sheets.

3. This report contains indications relating to the following items:

   - I ☒ Basis of the report
   - II ☐ Priority
   - III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
   - IV ☐ Lack of unity of invention
   - V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
   - VI ☐ Certain documents cited
   - VII ☐ Certain defects in the international application
   - VIII ☐ Certain observations on the international application

Date of submission of the demand	Date of completion of this report
12 November 2003 (12.11.2003)	28 June 2004 (28.06.2004)
Name and mailing address of the IPEA/EP Facsimile No.	Authorized officer Telephone No.

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.
PCT/EP2003/003782

I. Basis of the report

1. With regard to the **elements** of the international application:*

☐ the international application as originally filed

☒ the description:

pages 1-15, as originally filed

pages _____, filed with the demand

pages _____, filed with the letter of _____

☒ the claims:

pages 2-7, as originally filed

pages _____, as amended (together with any statement under Article 19

pages _____, filed with the demand

pages 1, filed with the letter of 17.05.04

☐ the drawings:

pages _____, as originally filed

pages _____, filed with the demand

pages _____, filed with the letter of _____

☐ the sequence listing part of the description:

pages _____, as originally filed

pages _____, filed with the demand

pages _____, filed with the letter of _____

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.
These elements were available or furnished to this Authority in the following language _____ which is:

☐ the language of a translation furnished for the purposes of international search (under Rule 23.1(b)).

☐ the language of publication of the international application (under Rule 48.3(b)).

☐ the language of the translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

☐ contained in the international application in written form.

☐ filed together with the international application in computer readable form.

☐ furnished subsequently to this Authority in written form.

☐ furnished subsequently to this Authority in computer readable form.

☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.

☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. ☐ The amendments have resulted in the cancellation of:

☐ the description, pages _____

☐ the claims, Nos. _____

☐ the drawings, sheets/fig _____

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).**

* *Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rule 70.16 and 70.17).*

** *Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.*

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Claims	1-7	YES
	Claims		NO
Inventive step (IS)	Claims		YES
	Claims	1-7	NO
Industrial applicability (IA)	Claims	1-7	YES
	Claims		NO

2. Citations and explanations

Reference is made to the following documents:

D1: US-A-5 700 559 (LOH IH-HOUNG ET AL)
23 December 1997 (1997-12-23)

D2: DE-C-196 18 812 (KARLSRUHE FORSCHZENT)
20 November 1997 (1997-11-20)

D3: DE-C-44 18 926 (KARLSRUHE FORSCHZENT)
8 February 1996 (1996-02-08)

D5: OH S Y ET AL: "Electrochemical properties of self-assembled cytochrome c on gold substrate patterned with a photosensitive polyimide film" OPTICAL MATERIALS, ELSEVIER SCIENCE PUBLISHERS B.V. AMSTERDAM, NL, Vol. 21, Nos. 1-3, January 2003 (2003-01), pages 265-269, XP004395432 ISSN: 0925-3467

D5: EP-A-0 874 242 (RANDOX LABORATORIES LTD.)
28 October 1998 (1998-10-28).

Document D6: WO-A-00/16082 (COMMISSARIAT A L'ENERGIE ATOMIQUE) 23 March 2000, was not cited in the international search report. A copy of the document is appended.

1. The applicant has filed with the letter of 17 May 2004 a new claim 1, which relates to the following method: method for immobilizing molecules on a support in which electrical sensors and evaluation circuits are integrated, said method comprising the following method steps:

a) a layer of a hydrophobic polymer is deposited on the surface of the support;

b) molecules are immobilized on the surface of the layer.

Claim 2 specifies in addition that the polymer consists of polyimide and/or polystyrene.

The subject matter of the new claim 1 was further restricted by a feature which was originally found only in the description. The International Preliminary Examining Authority has therefore undertaken a subsequent search in order to show that this feature, too, already represents a conventional embodiment of the claimed support, which is known to a person skilled in the art (see item 3 below).

2. None of the international search report citations (D1 to D5) deals with supports in which electrical sensors and evaluation circuits integrated. Consequently, the subject matter of claim 1 is novel in relation to those documents (PCT Article 33(2)).

3.1. The present application does not comply with the requirements of PCT Article 33(3), because the subject matter of claim 1 does not involve an inventive step within the meaning of PCT Article 33(3).

3.2. Document **D1** is considered to be the closest prior art for the subject matter of claim 1. D1 discloses (the references in parentheses are to D1) a body having a hydrophilic surface ("a hydrophilic article"), a porous support being coated with an ionic polymer layer. A polyelectrolyte layer is then bonded to the ionic polymer layer (see claim 1), that is, polyelectrolyte layer molecules are immobilized on the polymer layer.

Several of the polymers which are suitable for forming the polymer layer are hydrophobic. Polyimide, which is the feature of claim 2 of the present application, is cited in

this connection (see claim 3 and column 6, lines 1 to 5). That hydrophobic polymer is preferably treated with a plasma (see column 6, lines 28 to 41), which constitutes the feature of the current claim 4, in order to charge the layer positively or negatively, that is, ionically.

3.3. The subject matter of claim 1 differs therefore from the known method in that a support in which electrical sensors and evaluation circuits are integrated is used as the substrate. All the other features are found in, and known from, D1.

3.4. Attention is drawn to D6, which discloses a device comprising a plurality of analysis points on a surface. The support may be made of glass, silicon or organic polymer, but a substrate in which integrated circuits are located (see page 6, lines 1 to 9 and claim 8) can also be used. Consequently, the feature "support in which electrical sensors and evaluation circuits are integrated" is only one of several obvious possibilities from which a person skilled in the art would choose according to the circumstances, without thereby being inventive.

3.5. Dependent claims 2-7 do not contain any features which, in combination with the features of any claim to which they refer, meet the PCT requirements for novelty and inventive step (see documents D1 and D2 and the corresponding passages cited in the search report).

Additional observations:

4.1. Contrary to PCT Article 6, claim 1 is not supported by the description, because its scope goes beyond the scope justified by the description and the drawings. The reasons are as follows: it is clear from the description, page 3, lines 32 to 37 that the support is made of a semiconductor material. The current claim 1 concerns only a support in which electrical sensors and evaluation circuits are

integrated. The nature of the support should therefore be clearly defined.

4.2. Parentheses should be used in the claims only for reference signs (PCT Rule 6.2(b)). The current claim 7 should be amended accordingly.